An Overview Of Photographic Methods In Monitoring Non-Aqueous Phase Liquid Migration In Porous Medium

Motasem Y. D. Alazaiza[a], Su Kong Ngien[a], Mustafa M. Bob[b], Wan Mohd Faizal Ishak[c], Samira A. Kamaruddin[d]

[a]Faculty of Civil Engineering and Earth Resources, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia

[b]Taibah University, College of Engineering, Department of Civil Engineering, Madinah City, Kingdom of Saudi Arabia

[c]Centre of Earth Resources Research and Management, Universiti Malaysia Pahang, Malaysia

[d]UTM Razak School of Engineering and Advanced Technology, Universiti Teknologi, Malaysia

ABSTRACT

Over the last decades and among numerous techniques, image analysis techniques occupy a noticeable place in monitoring non-aqueous phase liquid (NAPL) migration in porous media. In recent years, photographic methods have been shown to be valuable and effective tools for measuring NAPL migration and characterization. This study aims to provide an overview of NAPL fate and behavior in subsurface systems. Furthermore, a review of recent literature published on using photographic methods in NAPL migration in one and two dimensions is summarized and presented in this paper. Besides the discussion of the research efforts, recommendations for future research in using photographic methods are provided. This study concluded that, although photographic methods have some limitations and drawbacks, photographic methods are still promising and valuable tools for measuring NAPL migration.

KEYWORDS: contaminants, NAPL, image analysis, photographic methods, porous media